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EXAMINER

CHANG, VICTOR S

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/549,618 | Applicant(s) SASAGAWA ET AL. | |
| | Examiner VICTOR S. CHANG | Art Unit 1794 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 5, 9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. Applicants' remarks filed on 6/30/2009 have been entered. Claim 16 has been cancelled. Claims 1-4, 6-8 and 11-15 are active.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In response to the amendments, the grounds of rejection have been updated as set forth below. Rejections not maintained are withdrawn.

Election/Restrictions

4. Applicants are reminded that in the reply filed 11/13/2006, the following species have been elected without traverse:

Category A: Composition of unhydrogenated copolymer

Category B: Composition of polymer foam

Category C: Functional group of modifiers

Category D: Composition of component (B)

Species A1: Copolymer block S (set forth in claim 1)

Species B1: Hydrogenated copolymer bonded to first-order modifier (in claim 8)

Species C: First-order modifier has an amino functional group (in claim 8)

Species D: Rubbery polymer (B), a hydrogenation product of a block copolymer comprised of a homopolymer block of vinyl aromatic monomer units and

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at least one polymer block selected from the group consisting of a homopolymer block of conjugated diene monomer units and a copolymer block comprised of vinyl aromatic monomer units and conjugated diene monomer units

Rejections Based on Prior Art

5. Claims 1-4, 6 and 13-15 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Karande et al. [WO 02/068529 A2], and evidenced by Hawkins et al. [US 3935176].

Karande's invention relates to an article prepared from a blend comprising 0 to 50 wt% of hydrogenated random styrene butadiene copolymer (copolymer block S) [pp. 3]. Foamed articles are used for various cushions and footwear including shoe soles, etc. [pp. 11].

For claims 1, 6 and 14, styrene reads on the vinyl aromatic monomer, butadiene reads on conjugated diene monomer. Karande is silent about 1) the composition (the vinyl bond content with respect to diene monomer) of the copolymer block S before hydrogenation (unhydrogenated), and the content of the styrene units in the hydrogenated component (A), and 2) the peak loss tangent of the hydrogenated component (A), and 3) the specific gravity (density) of the foam. However, regarding 1), Hawkins' invention relates a hydrogenated random copolymer of a conjugated diene and vinyl aromatic compound [abstract]. Hawkins teaches that variations in the vinyl content of the conjugated diene portion of the unhydrogenated copolymer affect the tensile strength. There is a steady decrease in tensile strength as vinyl content is increased. By adjustment of degree of hydrogenation (i.e. varying mole % saturation), the

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percent vinyl aromatic content and the vinyl content of the conjugated diene portion, a wide variety of properties in the final material may be obtained. Fig. 1 illustrates that the desired properties are obtained by adjusting the monomer ratios and vinyl bond content, i.e., these are result-effective variables for desired properties for various end uses. Since Karande teaches generally the same subject matter (foam cushions prepared from a blend of hydrogenated random styrene butadiene copolymer) for the same end uses as the claimed invention, absent any unexpected results, workable ranges of composition variables are deemed to be either anticipated, or obvious routine optimizations to one of ordinary skill in the art, as evidenced by Hawkins, motivated by the desire to provide the desired properties for the same end uses as the claimed invention. Regarding 2), the peak loss tangent is deemed to be inherent to the same chemistry of hydrogenated component (A), which has been rendered obvious as set forth above. Regarding 3) since the density of the foam is result effective to the cushioning properties, a workable density is deemed to be either anticipated, or an obvious routine optimizations to one of ordinary skill in the art, motivated by the desire to provide required cushioning properties for the same end uses as the claimed invention. Finally, regarding the component (B), since it is optional (encompassing 0 parts by weight), it is not a required limitation by the prior art, therefore it has not been given a patentable weight.

For claim 2, regarding polymer (B), Karande discloses that the blend comprises from 30 to 95 wt% of propylene copolymer, such as ethylene propylene copolymer (olefin polymer), for an improved impact resistance [pp. 3 and 8], i.e., a rubbery polymer.

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For claim 3, the absence of a crystallization peak to hydrogenated random styrene butadiene copolymer is deemed to be an inherent property to the same chemistry of a random copolymer composition.

For claim 4, absent any evidence to the contrary, the Official notice “the monomer distribution along the backbone of a random copolymer inherently has a taper distribution caused by the inherent difference in the monomer reactivities, as evidenced by Karande’s description of the copolymer as “substantially random” [pp. 4-5]” has been taken as admitted prior art.

For claim 13, since Karande discloses that ethylene propylene copolymer is useful for impact improvement, workable impact resilience is deemed to be either anticipated, or an obvious routine optimization to one skilled in the art, motivated by the desire to provide required properties for the same end uses as the claimed invention.

For claim 15, Karande discloses that the foamed articles are used for various cushions (shock absorber).

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karande et al. [WO 02/068529 A2] in view of Shibata et al. [US 5191024], and evidenced by Hawkins et al. [US 3935176].

The teachings of Karande are again relied upon as set forth above.

For claims 7 and 8, Karande is silent about a hydrogenated styrene butadiene copolymer bonded to a modifier having an amine functional group. However, Shibata’s invention relates to a modified hydrogenated diene block copolymer having excellent processability and weather resistance, impact resistance and flexibility, etc. [col. 1, ll. 5-13]. The modified block of alkenyl (vinyl) aromatic compound-conjugated diene copolymer has at least one functional group

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selected from the group consisting of acid anhydride group, carboxyl group, hydroxyl group, amino group [col. 2, ll. 2-26]. It would have been obvious to one of ordinary skill in the art to modify Karande with a modified hydrogenated styrene butadiene copolymer with an amino group of Shibata, motivated by the desire to obtain various improved properties.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karande et al. [WO 02/068529 A2], and evidenced by Hawkins et al. [US 3935176].

The teachings of Karande are again relied upon as set forth above.

For claims 11 and 12, Karande discloses that the blend may include styrenic block copolymers, such as styrene-butadiene-styrene, etc., in an amount up to 50 wt% [pp. 3 and 9]. Absent any evidence to the contrary, the Official notice “hydrogenation of styrene-butadiene-styrene block copolymer improves the aging resistance” has been taken as admitted prior art. It would have been obvious to one skilled in the art to modify the styrene-butadiene-styrene block copolymer of Karande with hydrogenation, motivated by the desire to improve the durability of the foamed article.

Response to Arguments

8. Applicants argue at Remarks page 6:

“tensile strength and elongation are not properties that one seeks for a polymer foam. In addition, one of the properties (peak of loss tangent) is not mentioned by either Karande or Hawkins.”

However, since foam is a composite material of air and polymer, the cushioning properties of the foam are inherently a composite of the properties of its components. Since Karande teaches generally the same subject matter (foam cushions prepared from a blend of hydrogenated random

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styrene butadiene copolymer) for the same end uses as the claimed invention, absent any unexpected results, workable ranges of composition variables are deemed to be either anticipated, or obvious routine optimizations to one of ordinary skill in the art, as evidenced by Hawkins, motivated by the desire to provide the desired properties for the same end uses as the claimed invention. Regarding the peak loss tangent of hydrogenated component (A) is deemed to be inherent to the same styrene butadiene copolymer, which has been rendered obvious as set forth above.

Applicants' arguments at pages 6-14 generally repeats the same issues as set forth above, and for the same abovementioned reasons they are unpersuasive.

Applicants argue at page 14:

"The Examiner states that "Karande discloses that the blend may include styrenic block copolymers, such as styrene-butadiene-styrene, etc., in an amount up to 50 wt% [pp.3 and 9]" (see page 5, lines 5-4 from bottom of the Office Action). However, the "styrenic block copolymer" referred to by the Examiner is an example of component (C) of the blend recited in Karande '529 (see page 3 of Karande '529), which, according to the Examiner, corresponds to the component (A) used in the present invention. The Examiner fails to explain how the component (B) recited in present claim 11 or 12 is anticipated by or obvious over Karande '529."

However, Karande discloses that the blend *may* include styrenic block copolymers, such as styrene-butadiene-styrene, etc., in an amount up to 50 wt% [pp. 3 and 9]. Clearly, Karande teaches styrenic block copolymers as an optional additional component to a blend composition comprising hydrogenated styrene butadiene random copolymer (A). Applicants appear to have confused styrene-butadiene-styrene block copolymer to be the same as styrene butadiene random copolymer. One of ordinary skill in the art would have recognized that these polymers have distinct molecular structure and they read on the elected components of the claimed invention.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VICTOR S. CHANG whose telephone number is (571)272-1474. The examiner can normally be reached on 6:00 am - 4:00 pm, Tuesday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Victor S Chang/
Primary Examiner, Art Unit 1794